We claim:

1. Diagnosing stroke using dynamic coupling of at least one ultrasonic transducer/receiver to a skull.

2. Using non-ultrasonic detection of symptoms of stroke to dynamically couple an ultrasonic transducer/receiver to a skull.

3. The method of claim 2 in which the non-ultrasonic detection comprises at least one of the group consisting of computed tomography scanning, magnetic resonance scanning, differential spectrophotometric methods, near-infrared detection of tissue characteristics, detection of a biological material, measurement of a biological material, detection of a chemical, measurement of a chemical, detection of S100β, measurement of S100β, use of biological assay techniques, detection of change in blood pressure, detection of change in pressure within the eye, detection of change in blood flow in arteries serving organs other than the brain, and detection of change in blood flow in the arteries serving the eye.

4. For a patient having a skull containing brain tissue and blood vessels, a process for diagnosing stroke in the patient, comprising:
   a) dynamically coupling at least one ultrasonic transmitter/receiver to at least one opening in the skull of the patient;
   b) imaging a region within the skull of the patient; and
   c) at least one of: determining presence of hemorrhagic stroke by identifying relatively diffuse blood flow within the skull of the patient; determining presence of ischemic stroke by identifying at least one location of inadequate blood flow within the skull of the patient; and diagnosing between hemorrhagic and ischemic stroke by classifying a region within the skull of the patient in terms of adequacy of blood flow.

5. The process of claim 4, in which the imaging comprises generating and receiving ultrasonic signals suitable for processing into information about the region within the skull of the patient.

6. The process of claim 4, in which a region is classified in terms of normal blood flow.

7. The process of claim 4, in which a region is classified in terms of inadequate blood flow.

8. The process of claim 4, in which a region is classified in terms of relatively diffuse blood flow.

9. The process of claim 4, in which locations of hemorrhagic stroke are determined by identifying relatively diffuse blood flow outside the blood vessels of the brain.

10. The process of claim 4 in which locations of ischemic stroke are determined by identifying relatively inadequate blood flow within the blood vessels of the brain.

11. The process of claim 4 in which presence of ischemic stroke is determined by identifying at least one location where there is at least partial blockage of blood flow.

12. The process of claim 4, further comprising applying a vacuum to the skull.

13. The process of claim 4, further comprising applying an acoustic coupling material to the skull.

14. The process of claim 4, in which the ultrasonic transducer/receiver is coupled to at least one man-made opening in the skull.

15. The process of claim 4, in which the ultrasonic transducer/receiver is coupled to at least ocular opening in the skull.

16. The process of claim 4, in which the ultrasonic transducer/receiver is coupled to at least one nasal opening in the skull.

17. The process of claim 4, in which the ultrasonic transducer/receiver is coupled to at least one aural opening in the skull.

18. The process of claim 4, in which the ultrasonic transducer/receiver is coupled to at least one acoustic bone window in the skull.